[0018] **FIG. 2A** is a diagram illustrating a step of manufacturing the micro-fluid passage element according to the first embodiment;

[0019] **FIG. 2B** is a diagram illustrating another step of manufacturing the micro-fluid passage element according to the first embodiment;

[0020] **FIG. 2C** is a diagram illustrating still another step of manufacturing the micro-fluid passage element according to the first embodiment;

[0021] **FIG. 2D** is a diagram illustrating still another step of manufacturing the micro-fluid passage element according to the first embodiment;

[0022] **FIG. 2E** is a diagram illustrating still another step of manufacturing the micro-fluid passage element according to the first embodiment;

[0023] **FIG. 2F** is a diagram illustrating still another step of manufacturing the micro-fluid passage element according to the first embodiment;

[0024] **FIG. 2G** is a diagram illustrating still another step of manufacturing the micro-fluid passage element according to the first embodiment;

[0025] **FIG. 2H** is a diagram illustrating still another step of manufacturing the micro-fluid passage element according to the first embodiment;

[0026] **FIG. 3A** is a diagram illustrating still another step of manufacturing the micro-fluid passage element according to the first embodiment;

[0027] **FIG. 3B** is a diagram illustrating still another step of manufacturing the micro-fluid passage element according to the first embodiment;

[0028] **FIG. 3C** is a diagram illustrating still another step of manufacturing the micro-fluid passage element according to the first embodiment;

[0029] **FIG. 3D** is a diagram illustrating still another step of manufacturing the micro-fluid passage element according to the first embodiment;

[0030] **FIG. 3E** is a diagram illustrating still another step of manufacturing the micro-fluid passage element according to the first embodiment;

[0031] **FIG. 3F** is a diagram illustrating still another step of manufacturing the micro-fluid passage element according to the first embodiment;

[0032] **FIG. 4** is a diagram showing a schematic view of the structure of a micro-fluid passage element according to the second embodiment of the present invention;

[0033] **FIG. 5** is a diagram showing a schematic view of the structure of a micro-fluid passage element according to the third embodiment of the present invention;

[0034] **FIG. 6** is a diagram showing a schematic view of the structure of a micro-fluid passage element according to the fourth embodiment of the present invention;

[0035] **FIG. 7A** is a diagram showing of the structure of the micro-fluid passage element according to the fourth embodiment, when viewed from above;

[0036] **FIG. 7B** is a diagram showing a cross sectional view of the structure, taken by line A-A of **FIG. 7A**;

[0037] **FIG. 8A** is a diagram illustrating a step of manufacturing the micro-fluid passage element according to the fourth embodiment;

[0038] **FIG. 8B** is a diagram illustrating another step of manufacturing the micro-fluid passage element according to the fourth embodiment;

[0039] **FIG. 8C** is a diagram illustrating a still another step of manufacturing the micro-fluid passage element according to the fourth embodiment;

[0040] **FIG. 8D** is a diagram illustrating a still another step of manufacturing the micro-fluid passage element according to the fourth embodiment;

[0041] **FIG. 8E** is a diagram illustrating a still another step of manufacturing the micro-fluid passage element according to the fourth embodiment;

[0042] **FIG. 9** is a diagram showing a schematic view of the structure of a micro-fluid passage element according to the fifth embodiment of the present invention;

[0043] **FIG. 10A** is a diagram showing of the structure of the micro-fluid passage element shown in **FIG. 9**, when viewed from above;

[0044] **FIG. 10B** is a diagram showing a cross sectional view of the structure, taken by line A-A of **FIG. 10A**;

[0045] **FIG. 11** is a diagram showing a schematic view of the structure of a micro-fluid passage element according to the six embodiment of the present invention;

[0046] **FIG. 12** is a diagram showing a schematic view of the structure of a micro-fluid passage element according to the seventh embodiment of the present invention;

[0047] **FIG. 13A** is a diagram-showing of the structure of the micro-fluid passage element shown in **FIG. 12**, when viewed from above; and

[0048] **FIG. 13B** is a diagram showing a cross sectional view of the structure, taken by line A-A of **FIG. 13A**.

DETAILED DESCRIPTION OF THE INVENTION

[0049] Embodiments of the present invention will now be described in detail with reference to accompanying drawings.

[0050] **FIG. 1** is a diagram showing a schematic view of the structure of a micro fluid passage element according to the first embodiment of the present invention.

[0051] As shown, a micro-fluid passage element **1** has a structure in which a flat quartz glass substrate **2** and a flat quartz glass substrate **3** are joined together via a laminated layer consisting of a polysilicon thin film **4**, an alkali ion-containing glass layer such as a borosilicate glass thin film **5** and a polysilicon thin film **6** and a piecing hole defined by these layers.

[0052] The piercing hole is defined by the cross sectional portions of the laminated layer (including the polysilicon thin film **4**, the borosilicate glass thin film **5** and the polysilicon thin film **6**), the lateral surface of the groove